

## Amendments to the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims

- 1     1. (currently amended) A fuel cell power plant (10) for  
2     generating electrical energy from a process oxidant  
3     stream (53, 42, 28) and a reducing fluid stream (26),  
4     the plant comprising:  
5         a) at least one fuel cell (12) for producing the  
6     electrical energy from the process oxidant stream (53,  
7     28) and the reducing fluid stream (26), and providing  
8     a fuel cell exhaust stream (48) containing moisture  
9     and sensible heat;  
10        b) an energy recovery device (32) having first and  
11     second gas flow channels (44, 42) separated by a  
12     respective enthalpy exchange barrier (46), the fuel  
13     cell exhaust stream (48) connected to pass through the  
14     first gas flow channel (44) and a source of process  
15     oxidant (30) for the process oxidant stream (53)  
16     connected to pass through the second gas flow channel  
17     (42), thereby to allow mass and heat transfer between  
18     the gases in the first and second gas flow channels via  
19     the enthalpy exchange barrier; ~~and~~  
20        c) a supply of liquid medium (66); and  
21        d) ~~injection means (58, 60) for disposed to~~  
22     injecting the a liquid medium (66, 64) substantially  
23     directly into the process oxidant stream (53)  
24     preparatory to the process oxidant passing through the  
25     energy recovery device second gas flow channel (42) for  
26     regulating the transfer of mass and heat between the  
27     fuel cell exhaust stream (48) and the process oxidant  
28     stream (53, 42).

1     **2.** (original) The fuel cell power plant (10) of claim 1  
2     wherein the energy recovery device includes an inlet  
3     (54) for receiving the process oxidant stream (53) to  
4     pass through the second gas flow channel (42), the  
5     liquid medium for injection is water, and the  
6     injecting~~en~~ means (58, 60) is positioned to inject the  
7     water into the process oxidant stream (53) immediately  
8     upstream of said inlet (54).

1     **3.** (original) The fuel cell power plant (10) of claim 2  
2     including a plenum (62) located immediately upstream of  
3     said inlet (54), said process oxidant stream (53) flows  
4     through said plenum (62), and wherein the injecting~~en~~  
5     means (58, 60) is operative to inject water (66, 64)  
6     into the plenum (62) for intimate mixing with and  
7     humidification of the process oxidant stream.

1     **4.** (original) The fuel cell power plant of claim 2  
2     wherein the injecting~~en~~ means comprises one or more  
3     spray nozzles (60) disposed to inject a spray of water  
4     (66, 64) into the plenum (62).

1     **5.** (original) The fuel cell power plant (10) of claim 3  
2     wherein the injecting~~en~~ means comprises one or more  
3     spray nozzles (60) disposed to inject a spray of water  
4     (66, 64) into the plenum (62).

1     **6.** (original) The fuel cell power plant (10) of claim 1  
2     including control means (70, 74, 78, 80, 84)  
3     operatively associated with the injecting~~en~~ means (58,  
4     60) for controlling at least the amount of the liquid  
5     medium (66, 64) being injected.

1     **7.**(original) The fuel cell power plant (10) of claim **6**  
2     wherein the control means (70, 74, 78, 80, 84) include  
3     at least one or the other of a temperature sensor (80)  
4     for sensing the temperature of ambient process oxidant  
5     and a humidity sensor (84) for sensing the moisture  
6     content of the ambient process oxidant.

1     **8.** (original) The fuel cell power plant (10) of claim **7**  
2     wherein the control means (70, 74, 78, 80, 84) includes  
3     both the temperature sensor (80) and the humidity  
4     sensor (84).

1     **9.** (original) The fuel cell power plant (10) of claim **1**  
2     wherein the enthalpy exchange barrier (46) of the  
3     energy recovery device (32) comprises a fine-pore  
4     support matrix.

1     **10.** (original) The fuel cell power plant (10) of claim  
2     **9** wherein the fine-pore support matrix is one or a  
3     combination selected from the group consisting of  
4     porous graphite layers; porous graphite-polymer layers,  
5     inorganic-fiber thermoset polymer layers, glass fiber  
6     layers, synthetic-fiber filter papers treated to be  
7     wetable, porous metal layers, and perforated metal  
8     layers with particulate material in the pores.

1     **11.** (currently amended) In a fuel cell power plant (10)  
2     for generating electrical energy from a process oxidant  
3     stream (53, 42, 28) and a reducing fluid stream (26),  
4     the plant comprising a fuel cell (12) for producing the  
5     electrical energy from the process oxidant stream (53,  
6     28) and the reducing fluid stream (26), and providing  
7     a fuel cell exhaust stream (48) containing moisture

8 and sensible heat; and an energy recovery device (32)  
9 having first and second gas flow channels (44, 42)  
10 separated by a respective enthalpy exchange barrier  
11 (46), the fuel cell exhaust stream (48) connected to  
12 pass through the first gas flow channel (44) and a  
13 source of process oxidant (30) for the process oxidant  
14 stream (53) connected to pass through the second gas  
15 flow channel (42), thereby to allow mass and heat  
16 transfer between the gases in the first and second gas  
17 flow channels via the enthalpy exchange barrier, the  
18 method comprising:  
19 dispensing water (66, 70, 74, 60, 64) substantially  
20 directly into the process oxidant stream (53)  
21 preparatory to the process oxidant passing through the  
22 energy recovery device second gas flow channel (42) for  
23 regulating the transfer of mass and heat between the  
24 fuel cell exhaust stream (48) and the process oxidant  
25 stream (53, 42).

1 **12.** (original) The method of claim **11** wherein the step  
2 of dispensing water (66, 70, 74, 60, 64) into the  
3 process oxidant stream (53) comprises monitoring (80,  
4 84, 90) one or more parameters of the fuel cell power  
5 plant (10), including the process oxidant stream (53,  
6 42, 28), and controllably injecting water into the  
7 process oxidant stream (53) in response to the one or  
8 more of the monitored parameters.

1 **13.** (original) The method of claim **12** comprising the  
2 steps of monitoring (80) the temperature of the process  
3 oxidant stream (53), and injecting water (66, 70, 74,  
4 60, 64) into the process oxidant stream when the  
5 temperature exceeds a threshold, thereby to cool and  
6 humidify the process oxidant stream (53, 42) to inhibit

7 dry-out of the enthalpy exchange barrier 46 in the  
8 energy recovery device 32.

1 14. (currently amended) The method of claim 13 wherein  
2 the temperature threshold is higher than~~in the range of~~  
3 about 85° F and lower than about~~to~~ 90° F.

1 15. (currently amended) The method of claim 12 wherein  
2 the operating status of the power plant (10) is  
3 monitored (70, 80) to identify ~~at the condition of~~ start-  
4 up condition, and injecting water (66, 70, 74, 60, 64)  
5 into the process oxidant stream upon start-up, at least  
6 after a shutdown exceeding a predetermined duration,  
7 for assuring sufficient wetting of the enthalpy  
8 exchange barrier (46) during start-up.

1 16. (original) The method of claim 15 wherein a  
2 temperature of the power plant (10), including the  
3 inlet temperature of the process oxidant stream (53,  
4 42, 28), is monitored (80) to detect a freezing  
5 condition, and controllably (70, 78) injecting heated  
6 water (66, 58, 60, 64) during start-up in response to  
7 detection of a freezing condition to defrost at least  
8 the energy recovery device 32.

1 17. (currently amended) The method of claim 12 wherein  
2 the fuel cell power plant (10) includes a coolant  
3 system (38, 88) having a coolant, the coolant having a  
4 level, and including the steps of monitoring (90) the  
5 level of coolant in the coolant system (38, 88) and  
6 injecting water (66, 58, 70, 74, 78, 60, 64) into the  
7 process oxidant stream when the coolant level exceeds a  
8 threshold, thereby to raise the dew point of the  
9 process oxidant stream (53, 42) to inhibit recovery of

10 water from the fuel cell exhaust stream 48 via the  
11 enthalpy exchange barrier 46 to the process oxidant  
12 stream (42).